



Editorial overview: Sustainability governance and transformation: 1.5 °C climate change and social transformation

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Acknowledging that ‘climate change is a common concern of humankind,’ parties to the United Nations Framework Convention on Climate Change (UNFCCC) agreed on December 12, 2015 to hold the increase in the global average temperature to well below 2 °C above pre-industrial levels, and to pursue efforts to limit that increase to 1.5 °C. Beyond this, the Paris Agreement also committed to strengthening the global response to climate change within the context of advancing sustainable development and efforts to eradicate poverty. Achieving these ambitious, interlinked goals clearly requires far-reaching policy transformations. Yet what kind of social transformations are actually needed to meet the combined challenges of limiting warming to 1.5 °C and achieving sustainable development and poverty eradication?

This special issue of COSUST is the result of an open call for short review articles that provide key insights on social transformations. We aimed to include articles that represent a large and integrated knowledge base and received a diversity of contributions from the natural and social sciences, humanities and the arts. These articles offer multiple lenses on and approaches to the 1.5 °C challenge, which together reveal what an integrated narrative on social transformations can offer. Below, we highlight some of the diverse ways that climate change responses can be understood, with an emphasis on the questions of ‘what’ and ‘how’ of social transformations to achieve the vision of the Paris agreement.

What types of sustainable social transformations?

Many of the articles in this special issue point to the need for holistic, inclusive and systematic approaches for social transformation towards a 1.5 °C warmer world. Without considering diverse approaches to transformation we risk oversimplifying the problems and underestimating society’s capacities to influence systemic change, whether positively or negatively. [Fazey *et al.*](#) highlight the importance of addressing multiple dimensions of climate change to advance adaptation that is essential for human wellbeing, while also encouraging wider and deeper transformational changes towards low carbon and more socially equitable societies. A way forward, [Veland *et al.*](#) argue, is to address the ‘narrative gap’ between our ‘now’ and visions of the future, by fostering spaces of listening, deliberation, debate, respect, imagination to enrich our understanding of what may be possible and desirable. [O’Brien](#) finds that decarbonization pathways have too often treated climate change as a technical problem. She argues that realizing the 1.5 °C target will require addressing the practical, political and the personal spheres of

transformation where people are engaged as subjects or agents of change rather than objects to be changed. Also referring to the limits of a zero-emission pathway approach, [Macintyre *et al.*](#) similarly stress the importance of more new social learning approaches that enables a shift from technocratic to collective decision making.

Taking an integrated approach, [Tabara *et al.*](#) identify positive tipping points for social transformations, which they describe as emergent properties of systems that would enable the fast deployment of transformative solutions. Within the context of rapid urban transformations, [Grandin *et al.*](#) suggest that the technical and economic framing often applied, is insufficient and call instead for stronger inclusion of the role of governance, infrastructure and everyday life. Open and energetic public engagement will also be vital for social transformation. [Tysczuk and Smith](#) argue that the arts and humanities can support citizen mobilization. This perspective is also advanced by [Galafassi *et al.*](#) who highlights a need to 'raise the temperature' of integration between multiple ways of knowing, drawing on insights from the arts. Similarly, [Roy *et al.*](#) argue that a shift in the intensity of energy services in everyday life has to be supported by policies, social norms and attitudes.

Whereas the ecological consequences of climate change are well understood there is less knowledge on the consequences of response measures on ecological systems and services. Vital land-based ecosystem services are already in undersupply in current climate argues [Benton *et al.*](#) and the many negative emissions strategies require land and further stress those services, underscoring the need for holistic approaches to land-use and tradeoffs. [Herrero *et al.*](#) also look at unintended consequences, but in the realm of energy consumption. They argue that Smart home technologies may reinforce unsustainable energy consumption patterns in the residential sector and do little to help the energy poor.

Bringing transformation to the forefront of climate change response tears down the long-lasting divisions between mitigation adaptation and sustainable development, a core contribution of Paris. In their article [Martinez-Baron *et al.*](#) show how adaptation is used as an entry point to address mitigation through climate-smart agriculture and how social networks can facilitate a rapid scaling of this approach. [Travis *et al.*](#) (2018) find that despite reduced risk in a 1.5 °C warmer world, the need for adaptation will be large for many people and areas, and some people may be forced into transformative adaptation.

How: coproducing climate governance

Alongside calls for sustainable, systemic change, several of the articles in this special issue call for a critical re-examination of climate governance in an increasingly complex and uncertain future. [Vervoort and Gupta](#) argue for a critical rethinking of anticipatory governance in research and scenario planning. [Patterson *et al.*](#) similarly advocate for a deliberate approach to transformations for a decarbonised society, one which brings a social justice lens to consider politically feasible effective and ethical approaches to governance. [Shrivastava and Persson](#) on the other hand point to the possibilities of Chinese leadership, based on the principles of silent transformations, continuous ongoing processes of subtle everyday change, without emphasis on causes and agency.

[Amundsen *et al.*](#) also suggest that local government is an effective entry point for transformation. These authors highlight the dual roles that local governments can play in transforming within their own organisations and acting as a catalyst for wider social change. In some cases, the governance structures are far from adequate to even respond to current challenges. In African urban contexts, [Pelling *et al.*](#) stress the urgency of addressing governance weaknesses particularly for informal settlements where vulnerability is high. [Lyon](#) also considers governance arrangements and the value of complexity-friendly approaches to climate action. Focusing on UNFCCC, Lyon calls for processes that encourage social learning, development of adaptive capacity and participatory decision making. Emphasizing the role of innovative clean energy startups in transformation, [Owen *et al.*](#) extend the discussion of governance to questions of finance and argue that greater attention must be given to public investment over the long term to support innovative, low-carbon early stage businesses.

These reviews offer fresh insight on ways to bend emission curves, protect societies from climate impacts, and ensure well adapted and thriving societies while trying to hold the world's climate at just 1.5° warmer than industrial times. Such far reaching transformations require collective empowerment and political will for a just and sustainable transition. The review articles in this special issue showcase ways the research community itself is willing to take transformations seriously. Taking intellectual risks for innovative and solutions oriented policy making, these authors also look critically at their own role in producing knowledge for transformations towards sustainability.